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Circular No. 13—Radio. (Second Edition—Revised)

U. S. DEPARTMENT OF AGRICULTURE
WEATHER BUREAU
C. F. MARVIN, Chief

Forecast Division

Washington, D. C., August 1, 1929

DISTRIBUTION OF WEATHER INFORMATION, FORECASTS, AND WARNINGS BY RADIO FOR THE BENEFIT OF MARINE INTERESTS ON THE NORTH ATLANTIC OCEAN AND COAST

The Weather Bureau issues daily (Sundays and holidays included) bulletins containing weather reports, forecasts, and warnings for the benefit of marine interests in the North Atlantic and in the States bordering on that ocean. These bulletins are broadcast from coastal radio stations, and beginning August 15, 1929, will conform to the provisions of this Circular.

All time referred to herein is 75th meridian (eastern standard time) and its equivalent in GCT, unless otherwise specifically indicated.

MAJOR MARINE BULLETIN

This bulletin is broadcast from the Arlington Naval Radio Station (call letters NAA) twice daily, as follows:

Morning bulletin at 10 a. m. (1500 GCT) on wave lengths of 4,409 meters (68 k. c.), 2,653 meters (113 k. c.), and 18.6 meters (16,120 k. c.) simultaneously.

Evening bulletin at 10 p. m. (0300 GCT) on wave lengths of 4,409 meters (68 k. c.) and 2,653 meters (113 k. c.), simultaneously.

The bulletin is divided into two parts and invariably begins with "Weather Bureau Bulletin".

The first part consists of surface weather conditions at a selected list of places, being based upon observations taken at 8 a. m. and 8 p. m. (1300 and 0100 GCT, respectively).

The foregoing list is followed by reports from ships in the North Atlantic Ocean, Gulf of Mexico, and Caribbean Sea. Ship observations taken at 7 a. m. are included in the a. m. bulletin, and 7 p. m. observations in the p. m. bulletin. Belated a. m. reports will be added to the following p. m. bulletin, and belated p. m. reports will be added to the next a. m. bulletin. Such belated reports will always be preceded by the words "Previous reports", or the actual date in case of older reports of importance.

The second part of the bulletin consists of a summary of general atmospheric pressure distribution over land and sea, including the locations of "high" and of "low" areas, and the barometer readings at their centers, wind and weather forecasts for Atlantic offshore areas and for the Gulf of Mexico, storm warnings for the Atlantic coast and Gulf of Mexico east of the Apalachicola River, and hurricane warnings and advices for the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea.

The following is a list of places for which weather observations are included in the regular broadcasts. Only the key letters, and not the names of the places, are transmitted:

Key letters, stations, and locations

Key letters	Name of station	Latitude north	Longitude west
		° ′	° ′
TP	The Pas, Man.	53 35	101 12
WG	Winnipeg, Man.	49 55	97 10
BK	Bismarck, N. Dak.	46 49	100 49
O	Omaha, Nebr.	41 16	95 58
KC	Kansas City, Mo.	39 05	94 35
OK	Oklahoma City, Okla.	35 29	97 31
DA	Dallas, Tex.	32 45	96 48
GV	Galveston, Tex.	29 19	94 50
DU	Duluth, Minn.	46 49	92 09
M	Marquette, Mich.	46 33	87 26
LC	La Crosse, Wis.	43 50	91 12
CH	Chicago, Ill.	41 50	87 40
SL	St. Louis, Mo.	38 39	90 13
CN	Cincinnati, Ohio.	39 07	84 30
NV	Nashville, Tenn.	36 11	86 50
LR	Little Rock, Ark.	34 41	92 15
VK	Vicksburg, Miss.	32 17	90 50
NO	New Orleans, La.	30 00	90 05
P	Pensacola, Fla.	30 25	87 12
L	Alpena, Mich.	45 05	83 25
D	Detroit, Mich.	42 21	83 03
F	Buffalo, N. Y.	42 53	78 50
PB	Pittsburgh, Pa.	40 26	79 57
LB	Lynchburg, Va.	37 27	79 08
CT	Charlotte, N. C.	35 17	80 39
AT	Atlanta, Ga.	33 45	84 21
TA	Tampa, Fla.	27 59	82 29
K	Key West, Fla.	24 40	81 48
MI	Miami, Fla.	25 46	80 12
NU	Nassau, Bahamas.	25 05	77 23
TI	Turks Island, W. I.	21 20	71 10
SJ	San Juan, P. R.	18 29	66 06
JA	Jacksonville, Fla.	30 21	81 40
C	Charleston, S. C.	32 50	79 58
WL	Wilmington, N. C.	34 18	77 59

Key letters, stations, and locations—Continued

Key letters	Name of station	Latitude north	Longitude west
		° ′	° ′
H	Cape Hatteras, N. C.	35 14	75 32
NF	Norfolk, Va.	36 51	76 18
BAL	Baltimore, Md.	39 18	76 38
AC	Atlantic City, N. J.	39 22	74 27
NY	New York, N. Y.	40 43	74 01
T	Nantucket, Mass.	41 15	70 00
BN	Boston, Mass.	42 22	71 02
N	Northfield, Vt.	44 08	72 40
E	Eastport, Me.	44 54	67 00
CK	Cochrane, Ont.	49 04	80 58
DC	Doucet, Que.	48 17	76 40
PN	Parry Sound, Ont.	45 20	80 01
ML	Montreal, Que.	45 31	73 34
FP	Father Point, Que.	48 30	68 30
BC	Port Aux Basques, N. F.	47 33	59 10
CR	Cape Race, N. F.	46 40	53 04
SAB	Sable Island, N. S.	43 56	60 00
HX	Halifax, N. S.	44 38	63 35
R	Bermuda	32 18	64 42
HT	Horta, Azores.	38 32	28 29

EXPLANATION OF CODE USED IN THE FIRST PART OF MAJOR MARINE BULLETIN

KEY TO GROUPS AND EXAMPLES

First group.

Barometric pressure (first three figures of group): Pressure, (reduced to sea level) in inches and hundredths, except that the first figure of full reading is omitted. Thus, if the corrected pressure is 29.98 inches, the figures 998 are sent, or if the reading is 30.14 inches, the figures 014 are sent.

Direction of surface wind (fourth figure of group).

0=calm, or no movement.
1=northeast.
2=east.
3=southeast.
4=south.
5=southwest.
6=west.
7=northwest.
8=north.

Force of wind (fifth figure of group): Sent according to Beaufort scale, values 0 to 9, inclusive.

Beaufort scale

Scale No.	Explanatory titles	Miles per hour (statute)	Terms used in forecasts
0	Calm	Less than 1	
1	Light air	1 to 3	Light.
2	Slight breeze	4 to 7	
3	Gentle breeze	8 to 12	Gentle.
4	Moderate breeze	13 to 18	Moderate.
5	Fresh breeze	19 to 24	Fresh.
6	Strong breeze	25 to 31	Strong.
7	High wind	32 to 38	
8	Gale	39 to 46	Gales.
9	Strong gale	47 to 54	
*10 (W)	Whole gale	55 to 63	Whole gale.
*11 (S)	Storm	64 to 75	
*12 (H)	Hurricane	Over 75	Hurricane.

*The numeral code does not admit of force in excess of 9 being sent. Therefore, the letters W, S, and H will be used for wind forces 10, 11, and 12, respectively.

NOTE.—The last column gives the terms applicable to the Beaufort scale which are used in the forecasts and warnings issued by the U. S. Weather Bureau.

Example of first group as sent: 99842.

Translation: Barometric pressure, 29.98 inches; wind from south; wind force, 2 (4 to 7 statute miles per hour).

Second group.

Present weather (first figure of group): State of weather at surface at 8 a. m. and 8 p. m.

1=clear (3 tenths or less).
2=partly cloudy (4 to 7 tenths).
3=cloudy (8 to 10 tenths).
4=raining.
5=snowing.
6=thunderstorm.
7=sleeting or hailing.
8=dense fog.

Pressure change (second figure of group) in hundredths of inch during two hours preceding observation.

0=change of less than .04 inch.
1=increase of .04.
2=decrease of .04.
3=increase of .06.
4=decrease of .06.
5=increase of .08.

6=decrease of .08.
7=increase of .10.
8=decrease of .10.
†9=increase or decrease of .12 or more.

†Whether it is an increase or decrease can be obtained by barometric tendency at surrounding stations.

Precipitation (third figure of group): The amount of precipitation during the previous 12 hours is indicated by the third figure of the group. The figure used is indicative of the amount of precipitation, as:

0= no precipitation.
1= .01 inch to .10 inch.
2= .12 inch to .20 inch.
3= .22 inch to .30 inch.
4= .32 inch to .40 inch.
5= .42 inch to .50 inch.
6= .52 inch to .60 inch.
7= .62 inch to .70 inch.
8= .72 inch to .80 inch.
9= .82 inch or more.

Current temperature (fourth and fifth figures of group): Temperatures are reported in even degrees, Fahrenheit. When the temperature is zero or 100°, the fourth and fifth figures will be 00; when between 2° and 8°, inclusive, the fourth figure will be 0 and the fifth figure the temperature; when below zero, complementary figures will be used (subtract coded temperature sent from 100° to obtain correct temperature). The significant figure 1 is omitted for temperatures of 100° or more. No confusion should arise in determining below zero and above 100° temperatures when the season of the year and the location of the reporting stations are considered.

Examples of temperature coded for stations which may be 100° or more in summer and below zero in winter:

(Bismarck) BK 62= 62° in summer or −38° in winter.
(Chicago) CH 00=100° in summer or zero in winter.
(St. Louis) SL 08=108° in summer or 8° in winter.

Examples of groups as sent and as translated:

52798: Snowing; pressure change, decrease of .04 inch during preceding two hours; precipitation .62 to .70 inch; current temperature, −2°. (If in winter.)

21374: Partly cloudy weather; pressure change, increase of .04 inch during preceding two hours; .22 to .30 inch precipitation; current temperature, 74°.

SHIP REPORTS

Ship reports are included in the first part of the bulletin immediately following the land stations. They are included in two groups, preceded by the name of the vessel. The first group consists of five numerals, signifying the ship's position, and the second group of five numerals expressing the barometric pressure, wind direction and force. The key to second group in ship reports is that used for first group in land reports. In the first group giving the ship's position (to the nearest degree), the first two numerals express the latitude (north) and the last three the longitude (west).

Example: *Calamares* 35065 00645.

Translation: S. S. *Calamares*; latitude 35 degrees north; longitude 65 degrees west. Barometric pressure, 30.06 inches; wind from the south; wind force of 5 (19 to 24 miles per hour).

NOTE.—The letter "X" will be substituted for any missing or unavailable data in any of the foregoing figure groups.

CONTENTS OF THE SECOND PART OF MAJOR MARINE BULLETIN

(*a*) Summary of general atmospheric pressure distribution over land and sea, including the locations of "high" and "low" areas, and the barometer readings at their centers.

(*b*) Wind and weather forecasts for Atlantic and Gulf of Mexico offshore areas:

North of Sandy Hook, N. J.
Sandy Hook to Cape Hatteras, N. C.
Cape Hatteras to Florida Straits.
East Gulf of Mexico (east of the 90th meridian).
West Gulf of Mexico (west of the 90th meridian).
Bermuda and vicinity.

(*c*) Storm and hurricane warnings whenever issued.

LOCAL BROADCAST SCHEDULES

The table below shows additional radio stations from which local distributions are made daily (including Sundays and holidays), their call letters, transmitting frequencies and wave lengths, the information broadcast therefrom, the hours of distribution, and the Weather Bureau stations from which the forecasts and information are supplied.

Whenever storm warnings are issued in the forenoon (based on 8 a. m. observations) they are broadcast at the same time as the wind and weather forecasts. When issued in the afternoon (based on special observations) or at night (based on 8 p. m. observations) they are broadcast at the evening hours indicated.

Ships may request any station listed herein to furnish the latest weather forecasts and warnings and weather reports.

Offshore wind and weather forecasts broadcast at or before noon and in the p. m. are for the 24 hours beginning at noon and midnight, respectively; storm warnings are for 24 hours beginning at the hour indicated in the warning messages.

In accordance with article 17, paragraph 2, of the General Regulations of the International Radiotelegraphic Convention of 1927, the 3-minute silent intervals are observed in connection with all broadcasts described herein.

Radio stations				Weather information broadcast	Hour of broadcasting (75th meridian and G. C. T.)	Stations issuing information
Location	Call letters	Frequency (k. c.)	Wave length (meters)			
Boston, Mass.....	NAD	102	2,939 CW	(*a*) Wind and weather forecasts and storm warnings for Maine, New Hampshire, Massachusetts, and Rhode Island coasts; advisory messages regarding storm warnings issued for north Atlantic coast; and 8 a. m. barometric pressure, wind direction and velocity, and state of weather at Portland, Highland Light, Nantucket, Block Island, and Boston.	(*a*) 11a. m. (1600)	Boston, Mass.
				(*b*) Storm warnings and advices.....	(*b*) 5 p. m. (2200)	
Chatham, Mass...	WIM	406	740	(*a*) Storm warnings for Atlantic and Gulf of Mexico and West Indian waters.	(*a*) When issued; also when requested by vessels.	New York, N. Y.
				(*b*) Barometric pressure and tendency, temperature, wind direction and velocity and tendency, visibility, cloudiness, and state of sea at Sandy Hook, N. J.	(*b*) 9 a. m. (1400) 5 p. m. (2200) Also whenever requested by vessels.	
Marion, Mass.....	WCC	129	2,326	do	do	Do
Tuckerton, N. J..	WSC	462	650	do	do	Do
Sayville, N. Y....	WSL	500	600	do	do	Do
New York, N. Y..	NAH	102	2,939 CW	(*a*) Wind and weather forecasts and storm warnings for New York and Connecticut coasts; (forecasts Sandy Hook to Grand Banks for European steamers*); advisory messages regarding storm warnings issued for north and middle Atlantic coasts and Gulf and West Indian waters; and 8 a. m. barometric pressure, wind direction and velocity, and state of weather at Sandy Hook.	(*a*) 10:30a. m. (1530)	New York, N. Y.
				(*b*) Storm warnings and advices issued in afternoon	(*b*) 4:30 p. m. (2130)	
				(*c*) Storm warnings for Atlantic and Gulf of Mexico coasts and West Indian waters, when issued, and	(*c*) 10:30 a. m. (1530) 4:30 p. m. (2130)	

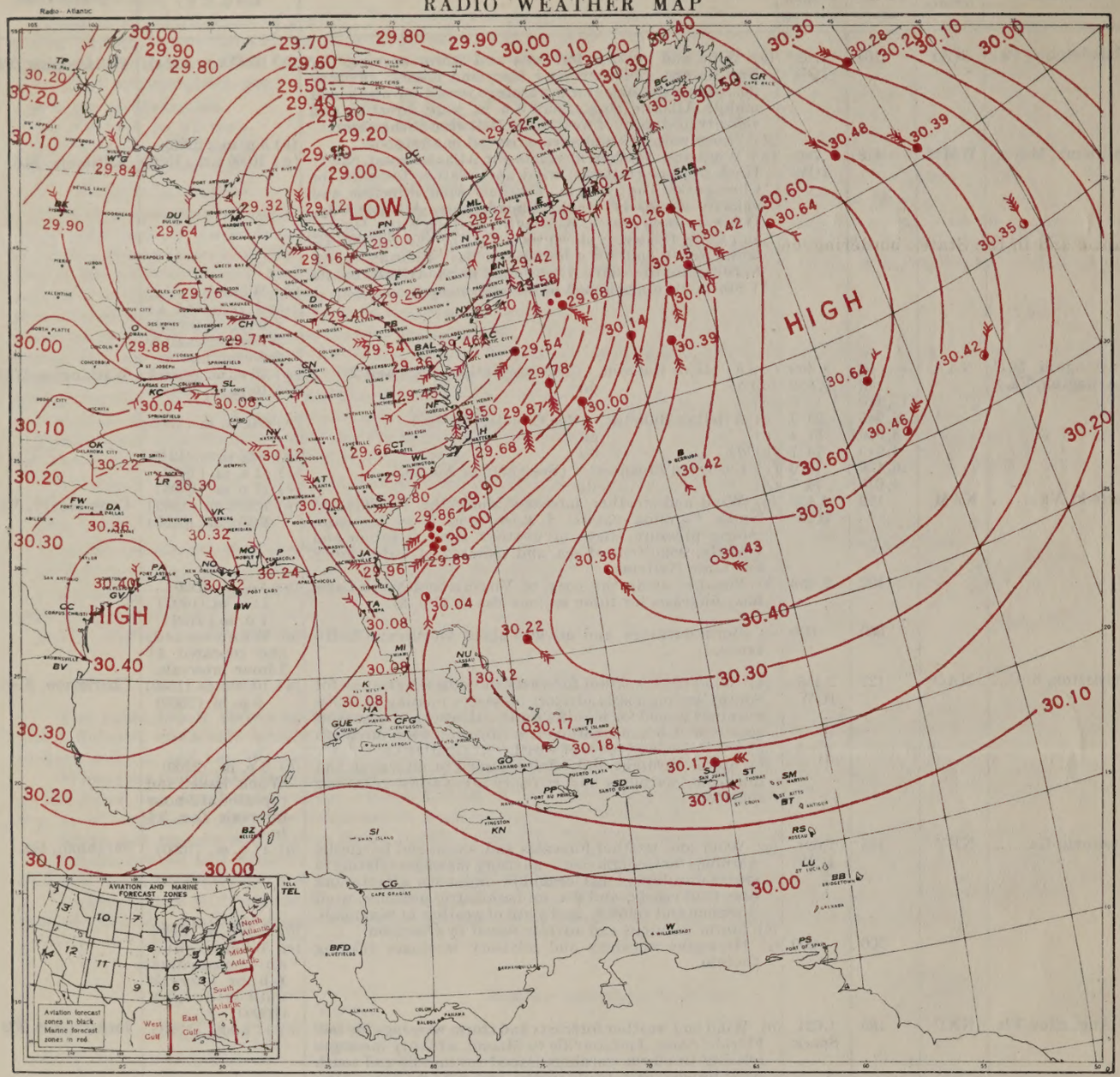
*Except Sundays and holidays.

Radio stations				Weather information broadcast	Hour of broadcasting (75th meridian and G. C. T.)	Stations issuing information
Location	Call letters	Frequency (k. c.)	Wave length (meters)			
Philadelphia, Pa..	NAI	104	2,883 ICW	(*a*) Wind and weather forecasts and storm warnings for New Jersey, Delaware, and Maryland coasts; advisory messages regarding storm warnings issued for north and middle Atlantic coasts; and 8 a. m. wind direction and velocity and state of weather at Delaware Breakwater.	(*a*) 10:45 a.m. (1545)	Philadelphia, Pa.
				(*b*) Storm warnings and advices issued in afternoon.	(*b*) 5 p. m. (2200)	
Baltimore, Md....	WMH	418	720 ICW	(*a*) Wind and weather forecasts for Atlantic coast, Sandy Hook to Cape Hatteras; wind and weather forecasts for Chesapeake Bay; 8 a. m. weather, wind direction and velocity at Sandy Hook, Philadelphia, Atlantic City, Delaware Breakwater, Baltimore, Norfolk, Cape Henry, and Cape Hatteras; storm warnings for the middle Atlantic coast and for Chesapeake Bay; advisory storm warnings for the south Atlantic and north Atlantic coasts.	(*a*) 10:30 a.m. (1530)	Baltimore, Md.
				(*b*) Storm warnings issued in the afternoon.....	(*b*) When issued, and repeated at 2-hour intervals at 18 minutes after the even hours.	
Washington, D.C. (Arlington, Va.)	NAA	68	4,409	(*a*)(*b*) Major Bulletin. (See description, pp. 1 and 2.)	(*a*) 10 a. m. (1500)	Washington, D.C.
		113	2,653	(*a*)(*b*) do	(*b*) 10 p. m. (0300)	
		16,120	18.6	(*a*) do		
		12,045	24.9	(*c*) Aviation Bulletin. (See Circular No. 16.)	(*c*) 8:05 a. m. (1305)	
		8,030	37.4	(*c*) do		
		4,015	74.7	(*c*)(*d*) do	(*d*) 8:05 p. m. (0105)	
		16,120	18.6	(*e*) European broadcast. (See Circular No. 16.)	(*e*) 11 a. m. (1600)	
		4,015	74.7	(*f*) do	(*f*) 11 p.m. (0400)	
Norfolk, Va.....	NAM	122	2,458 ICW	(*a*) Wind and weather forecasts along the Virginia and North Carolina coasts; 8 a. m. and 8 p. m. barometric pressure, state of weather, wind direction and velocity, condition of sea, and visibility at Cape Henry and Cape Hatteras.	(*a*) 8:30 a.m. (1330) 8:30 p.m. (0130)	Cape Henry, Va.
		122	2,458	(*b*) Weather along the coast of Virginia and North Carolina; forecasts for those regions also at 11 a. m.	(*b*) 4 a. m. (0900) 11 a. m. (1600) 4 p. m. (2100)	
		500	600	(*c*) Storm warnings and advices about storms and hurricanes.	(*c*) When issued, and repeated at 1-hour intervals.	
Charleston, S. C...	NAO	122	2,458 ICW	(*a*) Wind and weather forecasts and storm warnings for South Carolina coast; advisory messages relating to storm warnings issued for middle, south Atlantic, and east Gulf coasts; and 8 a. m. barometric pressure, wind direction and velocity, and state of weather at Charleston.	(*a*) 10.30 a.m. (1530) 6 p. m. (2300)	Charleston, S. C.
				(*b*) Storm warnings and advices issued in afternoon and hurricane warnings and advisory messages relating thereto.	(*b*) 6 p. m. (2300) When issued and repeated at 2-hour intervals for 24 hours.	
Savannah, Ga.....	NEV	185	1,621 ICW	(*a*) Wind and weather forecasts and storm and hurricane warnings for Georgia coast; advisory messages relating to storm warnings issued for middle and south Atlantic and east Gulf coasts; and 8 a. m. barometric pressure, wind direction and velocity, and state of weather at Savannah.	(*a*) 11 a. m. (1600)	Savannah, Ga.
				(*b*) Storm warnings and advices issued in afternoon	(*b*) 6:30 p.m. (2330)	
		500	600	(*c*) Hurricane warnings and advisory messages relating thereto.	(*c*) When issued and repeated at 1-hour intervals until midnight (0500).	
St. Augustine, Fla.	NAP	185	1,621 Spark	(*a*) Wind and weather forecasts and storm warnings for east Florida coast, Jacksonville to Miami; advisory messages relating to storm warnings issued for middle and south Atlantic and east Gulf coasts; and 8 a. m. barometric pressure, wind direction and velocity, and state of weather at Jacksonville and Titusville.	(*a*) 12 noon. (1700)	Jacksonville, Fla.
				(*b*) Storm warnings and advices when issued in afternoon.	(*b*) When issued.	
		500	600	(*c*) Hurricane warnings and advisory messages relating thereto.	(*c*) When issued and repeated at 2-hour intervals until 6 p.m. (2300)	
Jupiter, Fla.....	NAQ	185	1,621 ICW	(*a*) Wind and weather forecasts and storm warnings for east coast of Florida, Miami to Key West; advisory messages relating to storm warnings issued for the middle and south Atlantic and east Gulf coasts; and 8 a. m. barometric pressure, wind direction and velocity, and state of weather at Miami.	(*a*) 11.30 a.m. (1630)	Jacksonville, Fla.
				(*b*) Storm warnings and advices issued in afternoon.	(*b*) 6 p. m. (2300).	
		500	600	(*c*) Hurricane warnings and advisory messages relating thereto.	(*c*) When issued and repeated at 1-hour intervals for 12 hours.	

NOTE.—This Circular supersedes Circular dated July 15, 1925.
For distribution from radio stations at Key West, Pensacola, New Orleans, Port Arthur, Galveston, Brownsville, Guantanamo, San Juan, and Almirante, Panama, see Circular dated August 15, 1929, No. 14—Radio (fourth edition).
From Washington, D. C., see Circular No. 16, August 1, 1929 (second edition).
For Pacific coast distribution see Circular No. 10—Radio, May 1, 1929 (fourth edition), and No. 17, April 15, 1929 (second edition).

CHART SHOWING HOW WEATHER REPORTS BROADCAST IN MAJOR BULLETINS MAY BE ENTERED AND USED IN THE PREPARATION OF WEATHER MAPS AT SEA

RADIO WEATHER MAP



This map shows conditions that obtained in the a. m. of January 6, 1929, and is made up of data distributed by radio. Three elements are shown (in red) for each station and ship: Barometric pressure in inches, indicated by figures; wind direction, shown by arrow which flies with the wind; and wind force (Beaufort scale), indicated by the number of feathers on the arrow, and the character of the weather is indicated for ships. The red lines are isobars that pass through points having equal barometric pressure, and were drawn from inspection after the pressure values were entered. The centers of areas of low pressure are indicated by the word LOW and centers of high pressure by the word HIGH. Symbols indicate state of weather: ○ clear; ◑ partly cloudy; ● cloudy; ⁝ rain; ✳ snow; ≡ fog; Ⓜ report missing.

In the Northern Hemisphere winds blow spirally inward, counter-clockwise, toward and around the center of a LOW, while from the center of a HIGH they blow spirally outward in a direction similar to that described by the hands of a clock. The steeper the pressure gradient (that is, the closer the isobars are together) the higher are the wind velocities.

Copies of this base chart (size, 14¼ by 15 inches) will be supplied free to vessel masters who regularly take and forward weather observations to the U. S. Weather Bureau, or to the Hydrographic Office, U. S. Navy.